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It may even be conceived, as well remarked by J. F. Campbell, that such elevations might bring large areas of the earth's surface into the region of perpetual frost, thus giving rise to local glacial phenomena, while a warmer climate prevailed everywhere at the sea level. Nordenskiöld declares that he sought in vain for evidences of ice action in the various sedimentary deposits in Spitzbergen.

"In regard to a suggested explanation of former climatic conditions, the author may be permitted to quote the following language used by him in 1876: 'Recent speculations have revived the old notion of a possible change of the earth's axis of rotation as a way of explaining this change of arctic climate; but such a phenomenon is astronomically improbable, and is also opposed by the fact that the direction of the oceanic currents, which are guided by the earth's rotation, appears, from the distribution of marine sediments to have been the same since very early periods.' Dawson has since urged the same argument, and reinforced it by recalling the fact that the southward migrations of successive floras, not less than the lines of distribution of mechanical sediments in past ages, show that from early paleozoic time the general courses of the oceanic currents, and consequently the position of the earth's axis have not changed."

It seems to us that this is the soundest and best exposition of the question of pre-quaternary glacial climates that we have met with.

The Taconic rocks are further discussed, and the name Taconian suggested for the lower Taconic series. These Taconian rocks are regarded by the author as corresponding to "four great series of pre-Cambrian rocks, and mark as many successive periods in eozoic time." With a reference to recent views on the origin of crystalline rocks, and a re-affirmation of the neptunian views of the author, the preface closes.

BOTANICAL DIRECTORY.—The Botanical Directory for America for 1878, will be found exceedingly convenient. Part I gives the names of botanists and their state, while their full addresses will be found in Part II, where the names are arranged by states. The price of this useful directory is forty cents, three copies for one dollar. The list is a large one, and it is only to be desired that a larger portion of those whose names appear were so situated as to be able to be actively engaged as investigators.

WATSON'S INDEX TO NORTH AMERICAN BOTANY.¹—This is a compact volume compiled and printed with great evident care, and is a laborious and useful work. It is intended to facilitate

¹ *Bibliographical Index to North American Botany; or Citations of Authorities for all the recorded indigenous and naturalized species of the Flora of North America, with a Chronological Arrangement of the Synonymy.* By SERENO WATSON. Part I. Polypetalæ. Smithsonian Miscellaneous Collections. 258. Washington, March, 1878. 8vo, pp. 476.

the labors of botanists by furnishing references to all the published descriptions of species of North American plants, with a chronological arrangement of the synonymy. This part covers the ground of Vol. I of Torrey and Gray's *Flora of North America*. The territory embraced includes Greenland and the Arctic coast on the north, and the borders of Mexico closely adjacent to the United States on the south. The citation of authorities of the species west of the Mississippi and northward is designed to be full and complete, and the same may be said for the Atlantic States before 1840. The work has demanded a good deal of herbarium labor, and will give an undoubted stimulus to botanical studies.

RECENT BOOKS AND PAMPHLETS.—Some microscopical observations of the Phonograph Record. By Persifor Frazer. (Read before the Am. Philos. Society, April 5th, 1877). 8vo, pp. 16.

The Louisville Limestones, &c. By Jas. Hall. (Palæontology of New York, Vol. V, part 2. Advance sheets, Nov. 1877.) 4to, pp. 16.

Studier öfver mjölkdentitionen och tändernas Homologier hos Chiroptera. Af Wilhelm Leche. 4to, pp. 47. Pl. 2. Lund. 1875.

Studien über das Milchgebiss und die Zähnhomologien bei den Chiropteren, von Wilhelm Leche. An abstract of the proceeding in Archiv f. Naturgesch. xxxiii. Bd. 1. 1877.

Report of Prof. Joseph Henry, Secretary of the Smithsonian Institution, for the year 1877. Washington Gov. Printing Office, 1878. 8vo, pp. 50.

The Geographical distribution of the Mammalia, considered in relation to the principal Ontological regions of the Earth, and the laws that govern the distribution of animal life. By Joel Asaph Allen. Bulletin of the U. S. Geolog. and Geograph. Surv. IV, No. 2. 8vo, pp. 175. Washington, 1878.

On the Janssen Solar Photograph and Optical Studies. By S. P. Langley. 8vo, pp. 5. New Haven, 1878.

A commonly accepted theory in ophthalmic physiology disproved by a crucial experiment. By Henry Hartshorne, M.D. 8vo, pp. 2. (Extracted from the Am. Journ. Med. Sciences, for April, 1878.)

Water Supply of the State of New Jersey. Report of a Committee, A. R. Leeds, Chairman. 8vo, pp. 17. Philadelphia, 1878.

On the Asphaltic Coal from the shale of the Huron River, Ohio, containing seams of Sulphate of Baryta. By A. R. Leeds, with a geological note by J. S. Newberry. Read Jan. 11, 1875. 8vo, pp. 2.

Notes on the Locust in the North-west, in 1876. By George Dawson, F. G. S., &c. (From the Canadian Naturalist, Vol. VIII, No. 7.) 8vo, pp. 7. 1878.

On the Mechanical Genesis of Tooth-forms. By Jno. A. Ryder. (Proc. Phil. Acad. Nat. Sci. 1878.) 8vo, pp. 36.

Material for a Bibliography of North American Mammals. By Theodore Gill and Elliott Coues. Appendix B, extracted from the eleventh volume of the final reports of the Government Survey. 4to, pp. 131. Government Printing Office, Washington, 1877.

Original memoirs and clinical lectures. By H. C. Wood, Jr. 8vo, pp. 4. Philadelphia, 1878.

Polarity in character: A study of the sex of mind. By Richard Randolph. 8vo, pp. 20. Philadelphia, 1878.

Recherches sur les fossiles paléozoïques de la Nouvelle-Galles du Sud (Australie); par L.-G. De Koninck, Docteur en Sciences, etc., etc. Text 8vo, pp. 225, accompanied by 4to plates, V-XXIV. Bruxelles, 1876-77.

Palæontological Bulletin, No. 29, Descriptions of Extinct Batrachia and Reptilia from the Permian Formation of Texas. By E. D. Cope. (Published May 8, 1878.)

Ueber Laichen und Entwickelung des Ostsee-Härings. Von Dr. C. Kupffer (aus dem Jahresbericht der Commission zur wissenschaftlichen Untersuchung der deutschen Meere in Kiel). Berlin, 1878. 4° pp.